

IN THE CLAIMS:

Claims 1-180. (Cancelled).

181. (New) A method of processing data defining a model of a three-dimensional curved object comprising a plurality of representations to generate data defining a plurality of polygons for rendering, the method comprising, for each frame of image data to be rendered:

determining a common depth defining the number of polygons into which each representation in the model is to be converted;

determining whether data defining the polygons for the common depth is already stored; and

if the data for the common depth is already stored, then selecting the stored data for rendering; otherwise

generating data defining the polygons for the common depth, selecting the generated data for rendering, and storing the generated data for subsequent use.

182. (New) A method according to claim 181, wherein, in the operation of determining a common depth, each representation is tested to determine an individual depth therefor, and the individual depth defining the largest number of polygons is used as the common depth for all the representations.

183. (New) A method according to claim 181, wherein, in the operation of determining a common depth, a test on the model as a whole is performed to determine the common depth.

184. (New) A method according to claim 181, wherein, the common depth is determined in dependence upon an area of each representation.

185. (New) A method according to claim 184, wherein the area is the average area of all the representations.

186. (New) A method according to claim 181, wherein the common depth is determined in dependence upon the curvature of each representation.

187. (New) A method according to claim 181, wherein each representation is a polygon.

188. (New) A method according to claim 181, wherein each representation is a parametric surface patch.

189. (New) A method according to claim 181, further comprising the operation of rendering the polygons to produce rendered image data.

190. (New) A method according to claim 189, further comprising the operation of generating a signal conveying the rendered image data.

191. (New) A method according to claim 190, further comprising the operation of recording the signal.

192. (New) A method according to claim 189, further comprising the operation of displaying an image using the rendered image data.

193. (New) A method according to claim 189, further comprising the operation of making a recording of the image data either directly or indirectly.

194. (New) A method of rendering a three-dimensional computer graphics model, comprising:

receiving data defining a computer model of a three-dimensional object made up of a plurality of representations each of which models a respective part of the object;

processing the representations to replace each representation with the same number of polygons, rendering the polygons and storing data defining the polygons for subsequent use; and

when the three-dimensional computer model is to be subsequently rendered, using the stored data if the stored data defines the required number of polygons for each representation, otherwise processing the representations to replace each representation with the required same number of polygons, and rendering the polygons.

195. (New) Apparatus for processing data defining a model of a three-dimensional curved object comprising a plurality of representations to generate data defining a plurality of polygons for rendering, comprising:

a depth calculator operable to determine a common depth defining the number of polygons into which each representation in the model is to be converted for a given frame of image data;

a data searcher operable to determine whether data defining the polygons for the common depth is already stored;

a first selector operable to select the stored data for rendering if the data for the common depth is already stored;

a polygon data generator operable to generate data defining the polygons for the common depth if the data for the common depth is not already stored;

a second selector operable to select the data generated by the polygon data generator for rendering; and

a data storer operable to write the data generated by the polygon data generator to memory for subsequent use.

196. (New) Apparatus according to claim 195, wherein, the depth calculator is operable to test each representation to determine an individual depth therefor, and to use the individual depth defining the largest number of polygons as the common depth for all the representations.

197. (New) Apparatus according to claim 195, wherein, the depth calculator is operable to perform a test on the model as a whole to determine the common depth.

198. (New) Apparatus according to claim 195, wherein the depth calculator is operable to determine the common depth in dependence upon an area of each representation.

199. (New) Apparatus according to claim 198, wherein the area is the average area of all the representations.

200. (New) Apparatus according to claim 195, wherein the depth calculator is operable to determine the common depth in dependence upon the curvature of each representation.

201. (New) Apparatus according to claim 195, wherein each representation is a polygon.

202. (New) Apparatus according to claim 195, wherein each representation is a parametric surface patch.

203. (New) Apparatus according to claim 195, further comprising an image renderer operable to render the polygons to produce rendered image data.

204. (New) Apparatus according to claim 203, further comprising a display operable to display an image using the rendered image data.

205. (New) Apparatus for processing data defining a model of a three-dimensional curved object comprising a plurality of representations to generate data defining a plurality of polygons for rendering, comprising:

means for determining a common depth defining the number of polygons into which each representation in the model is to be converted for a given frame of image data;

means for determining whether data defining the polygons for the common depth is already stored;

means for selecting the stored data for rendering if the data for the common depth is already stored;

polygon data generating means for generating data defining the polygons for the common depth if the data for the common depth is not already stored;

means for selecting the data generated by the polygon data generating means for rendering; and

means for writing the data generated by the polygon data generating means to memory for subsequent use.

206. (New) Apparatus for rendering a three-dimensional computer graphics model, comprising:

a data receiver operable to receive data defining a computer model of a three-dimensional object made up of a plurality of representations each of which models a respective part of the object;

a representation replacer operable to replace each respective representation with the same number of polygons for rendering, and operable to store data defining the polygons for subsequent use; and

a renderer operable to render the polygons;

wherein, in use, the apparatus is controlled such that:

when the three-dimensional computer model is to be rendered for a second or subsequent time, stored polygon data is rendered if the stored data defines the required number of polygons for each representation, otherwise the representation replacer is controlled to replace each representation with the required number of polygons for rendering and to store data defining the polygons for subsequent use.

207. (New) Apparatus for rendering a three-dimensional computer graphics model, comprising:

means for receiving data defining a computer model of a three-dimensional object made up of a plurality of representations, each of which models a respective part of the object;

means for replacing each respective representation with the same number of polygons for rendering, and for storing data defining the polygons for subsequent use; and

means for rendering the polygons;

wherein, in use, the apparatus is controlled such that:

when the three-dimensional computer model is to be rendered for a second or subsequent time, stored polygon data is rendered if the stored data defines the required number of polygons for each representation, otherwise the means for replacing each respective representation is controlled to replace each representation with the required number of polygons for rendering and to store data defining the polygons for subsequent use.

208. (New) A storage medium storing computer program instructions for programming a programmable processing apparatus to become operable to perform a method as set out in claim 181 or claim 194.

209. (New) A signal carrying computer program instructions for programming a programmable processing apparatus to become operable to perform a method as set out in claim 181 or claim 194.

210. (New) A method of rendering a three-dimensional computer model of an object surface comprising a plurality of representations, the method comprising:

calculating an average size of at least some of the representations in the three-dimensional computer model;

generating a plurality of respective polygons to replace each representation with the number of polygons for each respective representation being determined in dependence upon the calculated average size, such that the same number of polygons is generated for each representation; and

rendering the generated polygons.

211. (New) A method according to claim 210, wherein an average area is calculated as the average size.

212. (New) Apparatus for rendering a three-dimensional computer model of an object surface comprising a plurality of representations, the apparatus including:

an average size calculator operable to calculate an average size of at least some of the representations in the three-dimensional computer model;

a polygon generator operable to generate a plurality of respective polygons to replace each representation in dependence upon the calculated average size such that the number of polygons generated for each representation is the same and is determined in dependence upon the calculated average size; and

a polygon renderer operable to render the generated polygons.

213. (New) Apparatus according to claim 212, wherein the average size calculator is arranged to calculate an average area of at least some of the representations.

214. (New) Apparatus for rendering a three-dimensional computer model of an object surface comprising a plurality of representations, the apparatus including:

means for calculating an average size of at least some of the representations in the three-dimensional computer model;

means for generating a plurality of respective polygons to replace each representation in dependence upon the calculated average size such that the number of polygons generated for each representation is the same and is determined in dependence upon the calculated average size; and

means for rendering the generated polygons.

215. (New) A storage medium storing computer program instructions for programming a programmable processing apparatus to become operable to perform a method as set out in claim 210.



216. (New) A signal carrying computer program instructions for programming a programmable processing apparatus to become operable to perform a method as set out in claim 210.